Product Support Bulletin ———————————

Subject: Equity 486SX/25 PLUS Questions and Answers

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Page(s): 1 of 10   **Originator: JAM/JO/MD**

GENERAL:

Q1.   **What microprocessor does the Equity 486SX/25 PLUS use?**

A.   **The Equity 486SX/25 PLUS utilizes the Intel 80486/25 SX microprocessor running at 8 or 25 MHz. Use of this CPU gives you 486 performance and compatibility in a 16-bit based computer architecture.**

Q2.   **What speed does the Equity 486SX/25 PLUS operate at?**

A.   **The Equity 486SX/25 PLUS operates at either a 8Mhz or 25Mhz processor speed. The default speed can be set by using the SETUP utility provided on the 486SX/25 PLUS REFERENCE diskette. The speed can be set by using the following keyboard commands:**

> **CTRL ALT + = 25 Mhz (High Speed)**
> **CTRL ALT - = 8 Mhz (Low Speed)**
> **CTRL ALT * = Automatic speed mode set (This is when the floppy disk drive is accessed.)**

There is also an ESPEED utility that can be run at the command prompt as follows:

> **ESPEED /H = Switch to high speed.**
> **ESPEED /L = Switch to low speed.**
> **ESPEED /A = Enables Automatic speed switching.**

If you run ESPEED with no parameters the following message is displayed:

> **Epson Speed control utility Version XXX**
> **Copyright (c) SEIKO EPSON CORP. 1990**
>
> **Usage: ESPEED [/H] [/L] VA]**
> **/H = set high speed (no auto speed)**
> **/L = set low speed (no auto speed)**
> **/A = set auto speed**

Q3. What is the Auto Speed function?

A. The Equity 486SX/25 PLUS is capable of operating at 25Mhz or 8Mhz. Some copy-protected applications require the computer to run at 8Mhz while accessing the program diskette. By enabling the Auto Speed function, the computer automatically switches to 8Mhz when accessing the diskette drive. It then switches back to 25Mhz for optimal performance. See above procedure for setting the Auto Speed function.

Q4. What BIOS does the Equity 486SX/25 PLUS use?

A. The Equity 486SX/25 PLUS BIOS is written specifically for the computer by Seiko-Epson Corp.

Q5. Does the Equity 486SX/25 PLUS have Cache Ram and can it be increased?

The Equity 486SX/25 PLUS utilizes an Intel A82385-25 Cache Controller with 32KB of high speed Static Ram. The Static Ram is surface mount soldered and there is no option for increasing the amount of Cache Ram.

Q6. Can the Equity 486SX/25 PLUS support an 80487DX co-processor?

A. No, but 80487SX-25 support is available. The Equity 486SX/25 PLUS has no socket for an optional 80487DX-25 math co-processor. Replacing the 80486SX/25 processor with an Intel 80487SX co-processor will activate dual processor/co-processor support. This allows extra processing power for math intensive programs like Lotus 1-2-3 or AUTOCAD.

Q7. Can the Equity 486SX/25 PLUS use option cards that are available for the IBM PC/AT?

A. The Equity 486SX/25 PLUS uses an AT-compatible ISA (Industry Standard Architecture) bus that enables you to install any of the various add-on products designed for IBM PC, XT or AT computer, such as: expanded memory, EGA or VGA video, internal modems and many more. It also supports all of the option boards manufactured by Epson for the EQUITY series. There are 6 standard I/O expansion slots (one with 8-bit bus and 5 with 16-bit bus). The 16-bit slots will also accept most 8-bit compatible cards. The Equity 486SX/25 PLUS offers flexibility in tailoring the system to your needs.

Q8. Are there any modem or fax products that can be used?

A. The Hayes Smartmodem 2400 and V-series 9600 Smartmodem (external) modems have been approved. The EverFax 24/96 (internal) by Everex and the Intel SatisFAXtion fax products have been approved.

Q9. Does the Equity 486SX/25 PLUS have a built-in mouse port?

A. Yes, it has a PS/2 compatible mouse port on the rear panel of the computer. The connector is a 6 pin mini DIN for an IRQ12 mouse or other device.

Q10. Can any other Equity keyboards be used on this machine?

A. Equity Ie, PLUS Series keyboards can be used on the Equity 486SX/25 PLUS.

Q11. What is the logical assignment of Diskette Drives?

A. When the Equity 486SX/25 PLUS is configured with two diskette drives, it will boot from either diskette drive. If you boot the system from a diskette in the second diskette drive, normally the B drive, that drive becomes drive A and the first diskette drive, normally drive A, becomes drive B. This assignment remains in affect until the system is reset with the reset switch, turned off, or is rebooted from the drive currently designated as drive B or the AFDD.EXE utility on the Reference Diskette is run (the use of AFDD is described later). Therefore, the drive assignments can be controlled in two ways:

    1. Boot the computer from a diskette in the drive you want assigned as drive A.
    2. Run the AFDD program to reverse the current drive letter assignment.

The current logical drive assignments remain in effect when the system is rebooted from the hard disk by pressing CTRL- ALT-DEL The drive assignments are lost if the system is turned off or reset with the reset button.

To use the AFDD utility, type AFDD at the command prompt and the following message appears on the screen:

Reassign FDD utility Version XXX
Copyright (c) SEIKO EPSON CORP. 1989

New Assign   Present
_____

Drive A: 1.2MB e== 1.44MB
Drive B: 1.44MB <== 1.2MB

(S)et and Reboot, Any other key to Abort ?_

If you press S, the drive letters are switched and the system reboots with the new assignments in effect. Pressing any other key aborts the operation and returns to the command prompt.

NOTE: The diskette drive types shown in AFDD message vary with the types of drives installed. If another type of diskette drive is installed (360 KB or 720KB), the message is adjusted accordingly.

Q12. What terminal emulation boards are compatible with the 486SX/25 PLUS.

A. The following products have been tested and approved:

3278/79 Emulation Adaptor	IBM
IBM 5250 Board	IBM
IRMA/2	DCA Inc.
IRMA/3	DCA Inc.
SDLC	IBM

Q13. Does the 486SX/25 PLUS have a battery for the Real Time Clock?

A. The 486SX/25 PLUS uses the Dallas DS1287 RTC which incorporates an HD146818 compatible real-time clock with an internal battery.

Q14. what video adapter comes with the 486SX/25 PLUS?

A. The 486SX/25 PLUS has built in VGA support that offers standard VGA (640 x 480 by 256 colors; interlaced mode), extended VGA (800 x 600 by 16 colors; interlaced mode) and Super VGA resolutions up to 1024 x 768 by 16 colors, non-interlaced mode. 1 Mb of Video Ram on system board.

Q15. Can the serial and parallel ports be disabled?

A. Yes, the parallel and serial ports can be disabled by running the SETUP program on the reference diskette and choosing DISABLE. The ROM BIOS has been enhanced to auto-detect serial and parallel port conflicts and will auto-configure the on-board ports to available LPT and COM addresses.

Q16. How many internal device bays does the 486SX/25 PLUS have, and will it support a full-height device?

A. The 486SX/25 PLUS has 3 external bays: one 1/3 height and two half-height bays. Internal bays: two half-height vertical mount bays configurable as a vertical full-height bay.

Q17. How many wait states does the 486SX/25 PLUS have?

A. At 25MHz, the system utilizes 0 wait states for RAM and ROM BIOS access on the motherboard. At 8MHz, all internal system memory cycles are 3 wait states.

Q18. Are the wait states user selectable?

A. No, the 486SX/25 PLUS automatically inserts them when needed. However, JP15 can be set to enable the early I/O channel ready signal, this adds one wait state to the CPU.

Q19. How many jumpers are on the system board?

A. There are fifteen (15) jumpers on the system board:
       * Factory Default Setting
       Jumper 1: Coprocessor enable/disable.
          A: 80487SX Coprocessor Installed
      *   B: 80486SX Processor Installed

       Jumper 2: NPX NMI signal\Coprocessor enable/disable
          A: 80487SX Coprocessor Installed
      *   B: 80486SX Processor Installed

       Jumper 3: NPX FERR signal\Coprocessor enable/disable
          A: 80487SX Coprocessor Installed
      *   B: 80486SX Processor Installed

       Jumper 4: Embedded VGA video port enable/disable.
      *   A: Enables the built-in video port
          B: Disables the built-in video port

Jumper 5: Power-on Password enable/disable.
    A: Disables the power-on password.
*   B: Enables the power-on password.

Jumper 6: Monitor type color/monochrome.
*   A: Color monitor is installed
    B: Mono monitor is installed

Jumper 7: Internal Mouse port IRQ12.
*   A: Assigned to on board PS2 mouse port
    B: IRQ12 assigned to bus expansion slots

Jumper 15: IOCHRDY enable/disable.
    A: Enables the early I/O channel ready signal
*   B: Sets a normal I/O ready signal

NOTE: J8 - J14 are Memory Size jumpers see Q28 on page 8 of 9.

HARD DISK DRIVES:

Q20. **What kind of hard disk drives are available for the 486SX/25 PLUS?**

A. As a factory configuration, the 486SX/25 PLUS is available with a 200MB, 3.5' hard disk (Conner CP-3204F, 16ms access time). This HDD offers a 1:1 interleave and uses an embedded controller with an IDE interface. When installing the 200MB drive, use Drive Type 64. These are the parameters:

Cylinders = 683, Heads = 16, Sectors = 38, Landing Zone = 683
(No write precomp needed)

Q21. **What hard drive controller is used in the 486SX/25 PLUS?**

A. The 486SX/25 PLUS uses a controller embedded on the hard drive. This controller connects to a Task File Host interface (IDE) that is integrated on the system board.

Q22. **Can the 486SX/25 PLUS use other hard disk drives and controllers?**

A. Yes, third-party IDE AT-TYPE drives can be used on the embedded Host Interface. The Host Interface on the system board can be disabled by installing an appropriate Hard Drive Controller on the buss. An Auto-sense feature disables the on-board IDE port. MFM, ESDI, SCSI third-party drives can then be utilized. 16-bit Hard Disk Controllers are recommended to maintain system performance.

Q23. **What extended hard drive support is available in the ROM BIOS that comes with the Epson 486SX/25 PLUS?**

A. **The Seiko-Epson BIOS will directly support hard drives that range in size from 10MB to 153MB. There is direct support for the Seagate ST-251 as well as several ESDI drives. By providing this support for 3rd party hard disk drives, the Equity 486SX/25 PLUS has the capability to use most 3rd party 8-bit and 16-bit hard disk controllers. SCSI drives have their own controllers attached to the drive and should work correctly when attached to the bus with a SCSI host adapter.**

The 486SX/25 PLUS also has a User Definable parameter setting that allows you to set up hard disk drives that are not supported by the 486SX/25 PLUS Drive Type Table. In SETUP, a sub-menu lists the settings you can change for each drive: the number of cylinders (tracks), the number of read/write heads, the number of sectors, the precompensation cylinder, the landing zone (the cylinder on which you want to park the heads when moving the computer), and the total storage capacity in megabytes. This allows you to use hard drives much larger than 153MB.

FLOPPY DRIVES:

Q24. **What types of floppy disk drives will work on the 486SX/25 PLUS?**

A. **The 486SX/25 PLUS comes standard with a 1/3 height 3.5" 1.44MB floppy disk drive. There is built-in BIOS support for industry standard 5.25" half-height 360KB and 1.2MB, as well as 3.5" half-height 720KB and 1.44MB floppy drives. All four drive sizes are available from Epson.**

Q25. **Will the 486SX/25 PLUS support 3 floppy disk drives?**

A. **Not directly, the Epson controller and ROM BIOS supports a maximum of two floppy drives. Two floppy drives and an internal tape backup can be accessed from the front panel.**

Q26. **Can the floppy disk controller be disabled?**

A. **No. The floppy disk controller is integrated in the system board and there are no jumpers to enable or disable it.**

MEMORY:

Q27. How much memory is standard on the 486SX/25 PLUS?

A. The proprietary memory adapter card has 4Mb of Surface Mount DRAM (4Mb base). The card also has 12 SIMM (Single In-line Memory Modules) sockets to increase memory up to a maximum of 16Mb.

Q28. How do I increase the memory of the 486SX/25 PLUS?

A. You can add SIMMs for increased on-board memory by installing them onto the proprietary memory adapter card in the 486SX/25 PLUS. Memory must be installed in a modular fashion. 4 SIMMS at a time compose a BANK 3 BANK's available from the 12 simm sockets. Each bank must utilize the same type of simm module for that bank. The system can utilize the follow types of simms:

256KB module = (256 Kilo-byte x 9 data-bits x 80nano-seconds)
  1 MB module = (1 Mega-byte x 9 data-bits x 80nano-seconds)

With added SIMMs, the total amount of on-board memory in the computer must be one of the following: 8, 9, 10, 12, or 16MB (4MB Base):

Memory Upgrade Configurations: 486SX/25 PLUS (4MB Base)

BANK1				BANK2				BANK3				
U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	U11	U12	Total Memory **
M	M	M										8MB
M	M	M	M	k	k	k						9MB
M	M	M	M	k	k	k	k	k	k	k		10MB
M	M	M	M	M	M	M						12MB
M	M	M	M	M	M	M	M	M	M	M	M	16MB

Legend:
M = 1 Mb x 9 x 80ns simm
k = 256kb x 9 x 80ns simm

** Total includes the standard 4MB of Base Memory

Jumper Setting For Extended Memory: JP8 - JP12

JP8	JP9	JP10	JP11	JP12	TOTAL MEMORY
B	B	B	B	A	4MB* (Base memory)
B	B	B	A	A	8MB
A	B	B	A	A	9MB
A	A	B	A	A	10MB
A	B	A	A	A	12MB
A	A	A	A	A	16MB

Jumper settings for base memory: JP13 & JP14

JP13	JP14	Conventional Memory
A*	A*	640KB
B	A	512KB
B	B	256KB

* Factory settings

Q29. What SIMMs should be used when adding memory to the 486SX/25 PLUS?

A. Use the Epson 1 MB kit (A808091) or the 2MB kit (A808101), to extend the system memory. Should you need to use third party SIMM modules we recommend the following:

Toshiba	1 MBit x 9 70 nSec
Matsushita	1 MBit x 9 70 nSec
CDC Enterprises	1 MBit x 9 70 nSec
Samsung	1 MBit x 9 70 nSec
Acculogic	1 MBit x 9 70 nSec

NOTE

The following SIMM chips do not work in the 486SX/25 PLUS:

IBM	Panasonic
Compaq	NMBS

SOFTWARE:

Q30. **what version of MS-DOS is provided with the 486SX/25 PLUS?**

A. **Epson MS-DOS is optional and the customer can choose between versions 3.30, 4.01 and 5.0.**

Q31. **Is the 486SX/25 PLUS compatible with OS/2?**

A. **Yes, IBM OS/2 1.30 has been tested on the 486SX/25 PLUS.**

Q32. **Will it support Unix and/or Xenix? Which versions?**

A. **The Equity SX PLUS has been tested with Santa Cruz Operations Xenix 386 Rel. 2.3.4, Santa Cruz Operations Unix System V 386 Rel. 3.20 and Interactive's Unix System V i366/i466 Rel. 4.0.**